SEMENOV, Yu.M.

Interpolation of linear operators in symmetrical spaces. Dokl. AN SSSR 164 no.4:746-749 O '65. (MIRA 18:10)

1. Voronezhskiy gosudarstvennyy universitet. Submitted March 13, 1965.

KREYN, S.G.; SEMENOV, Ye.M.

A space scale. Dokl.AN SSSR 138 no.4:763-766 Je '61. (MIRA 14:5)

1. Voronezhskiy lesotekhnicheskiy institut. Predstavleno akademikom M.A.Davrent'yevym.
(Spaces, Generalized) (Functional analysis)

SAL[illegible], [illegible]; [illegible], [illegible]

Lebesgue - Banach points. Usp. mat. nauk 20 no.6:151-156 (MIRA 18:12)
[illegible] '65.

1. Submitted Jan. 8, 1964.

SEMENOV, Ye.M.

Scale of spaces with interpolation property. Dokl. AN SSSR 148 no.5:1038-1041 F '63. (MIRA 16:3)

1. Predstavleno akademikom S.L.Sobolevym.
(Banach spaces) (Interpolation)

KARIMOV, Kh.K.; SEMENOV, Ye.M.

Study of the phenomena connected with the building of reservoirs for industrial sewage of the non-ferrous metallurgy enterprises. Sbor. nauch. trud. NII po stroi. ASiA no.4[illegible] '63.
(MIRA 17:8)

SEMENOV, Ye.M.

Imbedding theorems for Banach spaces of measurable functions. Dokl. AN SSSR 156 no.6:1292-1295 Je '64. (MIRA 17:8)

1. Voronezhskiy gosudarstvennyy universitet. Predstavleno akademikom A.N. Kolmogorovym.

SEMENOV, Ye.P.

Electron optical units used in investigating oil-immersion electrostatic systems. Opt.-mekh.prom. 25 no.6:20-24 Je '58. (MIRA 11:10)

(Electron optics)

ANAN'YEV, V.A., TKACHEV, P.G., POPIK, A.L., SEMENOV, Ye.P. SINAYKO, G.A., LITVAK, Ye.N.

Experiences in the prevention of Botkin's disease with gamma gloublin. Vop.virus 3 no.3:183-185 My-Je '58 (MIRA 11:7)

1. Institut virusologii imeni AMN SSSR, Moskva i Sanitarno-epidemiologicheskaya stantsiya Kishineva.
(HEPATITIS, INFECTIOUS, prevention & control
gamma globulin (Rus))
(GAMMA GLOBULIN, therapeutic use
in prev. of infect. hepatitis (Rus))

SISOYEVA, M.V. [Sysoieva, M.V.], kand.med.nauk; SEMENOV, Ye.P. [Semenov, IE.P.]

Vitamin B_1 balance in poliomyelitis. Ped., akush. i gin. 22 no.3: 16-18 '60. (MIRA 14:4)

1. Kafedra detskikh infektsionnykh bolezney (zav. - prof. M.M. Bezsonova) Krymskogo meditsinskogo instituta im. I.V.Stalina (direktor - dotsent S.I.Georgiyevskiy)
(POLIOMYELITIS) (THIAMINE)

NIKIFOROV, A.F.; SEMENOV, Ye.P.; STUNZHA, G.S.

Immunomorphological study of aseptic inflammation caused by deafferentation. Izv. SO AN SSSR no.4. Ser. biol.-med. nauk no.1:89-90'63. (MIRA 16:8)

1. Institut eksperimental'noy biologii i meditsiny Sibilskogo otdeleniya AN SSSR, Novosibirsk.
(INFLAMMATION) (NERVES)
(ANTIGENS AND ANTIBODIES)

SEMENOV, Ye.P.; TSOY, L.A.

Autoantibodies in experimental myocardiac infraction. Izv. SO AN SSSR no.12. Ser. biol.-med. nauk no.3:145-146 '63. (MIRA 17:4)

1. Otdel eksperimental'noy biologii Instituta tsitologii i genetiki Sibirskogo otdeleniya AN SSSR, Novosibirsk.

SEMENOV, Ye.P.

Electron-optical intensifiers of the brightness of the image.
Zhur.nauch. i prikl.fot. i kin. 8 no.5:385-399 S-O '63.
(MIRA 16 :9)

SEMENOV, Ye. S.

"Automatic Gain Control for Audio-Frequency Pulse Signals", Radio, No. 3, p 28, 1950.

SEMENOV, Yefim Semenovich; POLUNIN, V., red.; KUZNETSOVA, A., tekhn. red.

[Volunteer design office] Obshchestvennoe konstruktorskoe biuro. Moskva, Mosk. rabochii, 1961. 52 p. (MIRA 14:7)
(Moscow--Rubber industry)

SEMENOV, Ye.S.

[Investigating turbulent flow of gas under piston engine conditions; author's abstract of a dissertation presented for the degree of candidate of technology] Issledovanie turbulentnogo dvizheniia gaza v usloviiakh poshnevogo dvigatelia; avtoreferat dissertatsii, predstavlennoi na soiskanie uchenoi stepeni kandidata tekhnicheskikh nauk. Moskva, Akad.nauk SSSR, 1958. 9 p. (MIRA 12:8)
(Fluid dynamics) (Gas and oil engines)

SEMENOV, Ye. S., Cand Tech Sci -- (diss) "Study of the turbulent movement of gas ~~in~~ under piston engine conditions." Mos 1958, 10 pp. (Acad Sci USSR. Inst Chem Phys) 130 copies (KL, 21-58, 91)

SOV-120-58-1-23/43

AUTHOR: Semenov, Ye. S.

TITLE: An Apparatus for Measuring Turbulence in a Piston Engine (Apparatura dlya izmereniy turbulentnosti v porshnevom dvigatele)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1958, Nr 1, pp 93-101 (USSR)

ABSTRACT: A description is given of an apparatus used to study the turbulence of cyclic currents under variable temperature and pressure conditions, for example, in the cylinder of a piston engine. The apparatus automatically carries out the necessary functional transformations and the statistical treatment of the pulse signals from the electro-thermo anemometer and indicates the mean and pulse speeds at any point of the cycle. The apparatus can also be used to study the frequency spectrum of turbulent pulsations. Complete circuit diagrams of the system are given in Figs.4, 5 and 6. The thermo anemometer described in Ref.2 was placed in the chamber of the engine and gives a continuous signal whose magnitude depends on the instantaneous speed, density and temperature. Since a functional relation can be written down for ρ and t, it follows that the signal is a function of two independent variables, namely, the

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SOV-120-58-1-23/43

An Apparatus for Measuring Turbulence in a Piston Engine.

instantaneous speed, V , and the temperature, t . The signal is then analysed and treated by the above circuitry. An example of an oscillogram of the instantaneous speed of the current at a point inside the cylinder of the engine is given in Fig.1 for 4 consecutive cycles. There are 13 diagrams, no tables and 6 references, of which 4 are Soviet and 2 are English.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR)

SUBMITTED: December 14, 1956.

1. Combustion chamber gases--Tubulence 2. Turbulence--Measurement 3. Electric currents--Testing equipment 4. Pressure--Electrical effects 5. Temperature--Electrical effects

Card 2/2

SOV/24-58-8-25/37

AUTHORS: Semenov, Ye. S. and Sokolik, A. S. (Moscow)

TITLE: Investigation of the Turbulence in the Cylinder of a Piston Engine (Issledovaniye turbulentnosti v tsilindre porshnevogo dvigatelya)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 8, pp 130-134 (USSR)

ABSTRACT: The process of combustion in the cylinder of piston engines takes place under conditions of intensive turbulence which strongly influences spreading of the flame and, in injection engines, the atomization of the fuel. The present investigation had as the object the study not only of the mean velocity $\bar{v}$ (Refs 1 and 2) but also the following characteristics of the turbulence: root mean square of the fluctuating velocity $\sqrt{\overline{v'^2}}$ and the spectrum of the fluctuations F(f) at different phases of the cycle in different points of the combustion chamber. The readings were taken by means of an electro-thermo-anemometer (ETA-5A) (Ref 3) designed for analysis of unsteady flows with whirls. Full description of the apparatus for measuring the turbulence is given in Ref 4 and also in Refs 5 and 6 from which the formulae (3), (4) and (5) are taken. The coefficient of the heat loss from

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Investigation of the Turbulence in the Cylinder of a Piston Engine

the wire placed perpendicularly to the direction of the flow is given by:

$$\alpha = C\lambda d^{n-1}\left(\frac{v\rho}{\mu}\right)^{m} \qquad (1)$$

α and therefore the current in ETA being a function of (v, ρ, t) and λ and μ being functions of t, where C and n are some empirical constants, λ, μ, ρ are thermal conductivity, viscosity and density of the gas respectively, v is the velocity of the flow and d is the diameter of the wire in ETA.

Putting $i_o = K_{\rho t} i$ (2)

where $K_{\rho t} = f(t)$ is the coefficient of adduction we get $i_o = f(v)$ only, i.e. it does not depend on ρ and t, from which the velocity may be obtained. The apparatus RTD (registration of turbulence in engines) producing a stress, by means of a resistance thermometer of small inertia, proportional to $K_{\rho t}$ when placed in the combustion chamber, was capable of performing the multiplication in conformity with Eq.(2), and of the linearization of dependence of the

Card 2/6

Investigation of the Turbulence in the Cylinder of a Piston Engine

initial stress U_{in} on the velocity. From the signals of v, selected over the crank angle of 24^{o} of each cycle (this was done by means of a cut-out operated by the crank) the temporal mean value $\bar{v}$ and the fluctuating component v' were determined by averaging 25 to 50 cycles. These values were read directly from suitably calibrated voltmeters. Measurements of the turbulence fluctuations was limited to frequencies between 300 and 6000 hertz. The experiments were carried out on the single cylinder engine SFR of variable compression ratio, the combustion chamber being a cylinder of diameter 82.6 mm. Fig.1 shows the layout of the measuring stations: 1 - inlet valve, 2 - exhaust valve, 3 - resistance thermometer, 4 - headpiece of the hot wire anemometer. The results of the experiments are shown on the graphs 2, 3, 4, 6, 7 and 8 as follows: Fig.2 shows the change in $\bar{v}$ versus the crank angle during the stroke of suction at various distances from the axis of the cylinder with compression ratio $\varepsilon = 6$ and n = 900 r.p.m. It is seen that there are striking differences in $\bar{v}$ at different points in the cylinder, this result being at variance with Ref 2; large

differences even at the point close to each other (r = 10-13, 13-15 mm) indicate that the flow is in a form of a concentrated jet during suction and not a widely spread one. Fig.3 shows the profiles of the mean velocity $\bar{y}$ across the chamber for three crank angles (60°, 120° and 180°) during the suction stroke and for three different speeds: 600, 900 and 1200 r.p.m. Compression ratio 6. Volumetric efficiency $\eta_v = 0.71$ is shown as the curve 1, and $\eta_v = 0.24$ as the curve 2. Fig.4a shows the variation of the mean velocity and the fluctuating velocity with the speed of the engine, while 4b shows how these velocities change with the volumetric efficiency (i.e. as a result of throttling) at the crank position of 120°. The presence of intensive turbulent fluctuations is visible from Fig.5 (upper curve); the lower curve represents pressure changes. The notches are at 30° intervals. Figs.6,7 and 8 refer to the stroke of compression. Fig.6 shows the variation of the mean velocity as well as of the fluctuating component with the crank angle at the crank speed of 900 r.p.m. $\eta_v = 0.71$, r = 23 mm. The

Investigation of the Turbulence in the Cylinder of a Piston Engine

coefficient K_0^1 is the correction factor necessary to compensate for the fact that $\bar{v} \gg v'$ was not satisfied in these experiments and therefore the effect of the wire length had to be taken into account. Fig.7 shows the mean and fluctuating velocities at O.D.C. (i.e. at the end of compression stroke) for $\varepsilon = 6$ and $n = 900$ r.p.m. as follows: a) across the cylinder, b) at a distance 10 mm from the axis as a function of the variable compression ratio ε, c) ditto as a function of the volumetric efficiency and d) ditto as a function of the crank speed n. Fig.8 shows the variation of the energy of the turbulence, where $w_1 = (\overline{v'^2} + \overline{v^2})$ is the energy of the high frequency pulsation and of the swirl motion per unit mass, $w_2 = \frac{1}{2}\overline{v'^2}$ and $w_3 = \frac{1}{2}\rho(\overline{v'^2} + \overline{v^2})$. Generally speaking during the stroke of suction $\sqrt{\overline{v'^2}}$ increases everywhere where grad $\bar{v}$ increases, e.g. with increase in n and η_v. There are, however, some points where $\sqrt{\overline{v'^2}}$ is large though grad $\bar{v}$ is small at those points. This may be due

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Investigation of the Turbulence in the Cylinder of a Piston Engine

to the fact that only the components of $\bar{v}$ and grad $\bar{v}$ perpendicular to the wire can be measured experimentally with this apparatus, not their total values. It appears further that neither

$$\sqrt{\overline{v'^2}}$$

during compression stroke nor grad $\bar{v}$ during the suction stroke do depend upon the compression ratio, leading to the conclusion that the real cause of pulsation during the compression stroke is the turbulence produced in the stroke of suction.

There are 8 figures and 7 references, 2 of which are Soviet, 4 English, 1 German.

SUBMITTED: May 22, 1957

1. Combustion--Turbulence 2. Fuels--Atomization 3. Combustion chambers--Performance 4. Internal combustion engines

SEMENOV, Ye. S.

with A. S. Sokolik "Dealt with the investigation of the working cycle in the cylinder of the engine by means of a compensated thermo-anemometer"

report presented at the conference on Combustion and Formation of the Mixture in Diesel Engines, convened by the Motor Laborstory, Acad. Sci. USSR, Moscow 10-12 June 1958.
(Vest. Ak Nauk SSSR, 1958, No. 9, 115-117)

SOV/2542

17(1); 10(2); 24(8) PHASE I BOOK EXPLOITATION

Akademiya nauk SSSR. Energeticheskiy institut

Goreniye v turbulentnom potoke; dokladyi na obshchesoyuznom seminare po goreniyu pri energeticheskom institute AN SSSR (Combustion in Turbulent Flow; a Discussion in the All-Moscow Seminar at the Power Engineering Institute, USSR Academy of Sciences) Moscow, Izd-vo AN SSSR, 1959. 167 p. Errata slip inserted. 2,000 copies printed.

Ed.: L. N. Khitrin, Corresponding Member, USSR Academy of Sciences; Eds. of Publishing House: R. I. Kosyk and M. M. Koorot; Tech. Ed.: P. S. Kashina.

PURPOSE: This collection is intended for research scientists in the fields of thermodynamics and fluid mechanics.

COVERAGE: The collection contains six papers which present the results of experimental and theoretical research on combustion phenomena under conditions of turbulent flow.

SEMENOV, Yu.S. Investigation of the Turbulent Motion of a Gas Under Piston Engine Conditions 141

This paper investigates several turbulence characteristics of the motion of a gas. Included are studies of the characteristics of the gas motion during intake and compression in the presence of a source of turbulence, the variation of turbulence characteristics during a cycle, and in the combustion phase the effects of certain parameters and engine regimes on the turbulence and the frequency spectrum of turbulent pulsations. The effect of the shape of the combustion chamber was not investigated. A detailed and comprehensive discussion of the research methods and test apparatus is presented and reproductions of many oscillograph methods are given. The paper is based on data presented in an earlier report by the author and A. S. Sokolik, "Investigation of the Turbulent Motion of a Gas Under Piston Engine Conditions", (Issledovaniye turbulentnogo dvizheniya gaza v usloviyakh porshnevogo dvigatelya), Izv. AN SSSR, OTN, 1958, No. 8.

AVAILABLE: Library of Congress

Card 6/6

IA/dal
11-24-59

66430

SOV/20-128-6-35/63

5 (4) 11.1000

AUTHORS: Karpov, V. P., Semenov, Ye. S., Sokolik, A. S.

TITLE: Turbulent Combustion in a Closed Space

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 6, pp 1220 - 1223 (USSR)

ABSTRACT: In the authors' Association it has been endeavored since 1950 (Ref 1) to develop a method for the determination of the combustion rate in a turbulent gas flow. The result of this work was the apparatus shown in figure 1, a nearly spherical tank in which the gas was stirred to turbulent motion by agitators driven by electric motors. Ignition was by an electric spark in the tank center, the pressure was measured and recorded by means of piezo quartz. Through two parallel glass panes the propagation of the flame could be filmed by means of a schlieren apparatus (Fig 2). As can be seen from figure 3, the pressure in the turbulent flame remains lower than in the laminar flame. The intensity $|U'|$ of the turbulence was measured at various distances from the center by means of a compensated electrothermoanemometer of the type ETA 5A. The analysis of the oscillogram showed that high-frequency pulses were superimposed to

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Turbulent Combustion in a Closed Space

the $|U'|$, which amounted to $(\bar{u}'^2)^{1/2}$ with respect to the turbulent diffusion. For the entire turbulence U'_Σ therefore $U'_\Sigma = \left\{|\bar{U}'|^2 + \bar{u}'^2\right\}^{1/2}$. It is shown in figure 4 that the rate U_T of turbulent combustion increases linearly with the intensity of the turbulence: $U_T = a.U'_\Sigma + b$, where coefficient a lies between 1 and 2 for low temperatures. There are 4 figures and 5 references, 2 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemicophysics of the Academy of Sciences, USSR)

PRESENTED: June 11, 1959, by V. N. Kondrat'yev, Academician

SUBMITTED: June 5, 1959

Card 2/2

SEMENOV, Ye.S.(Moskva)

Heat distribution between heating and reaction zones in spherical flames. PMTF no.4:105-107 Jl-Ag '62. (MIRA 16:1)
(Flame)

41324

S/057/62/032/009/007/014
B125/B186

11.6300
11.7200

AUTHORS: Semenov, Ye. S., and Sokolik, A. S.

TITLE: Study of ionization in spherical flames by the method of probe characteristics

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 9, 1962, 1074-1083

TEXT: The ion concentration distribution N(x) over the cross section of the flame zone in a centrally ignited spherical steel bomb (with two plane-parallel windows and two ignition electrodes) was measured by Langmuir's method of probe characteristics. The measurements were made with propane-air mixtures at pressures of 0.15 - 2 atm. When the flame passed the fixed probe an oscillogram was taken with a double-trace electron oscilloscope. The ionization current profile along the x-coordinate was determined from these oscillograms, using the equation $x = u_{vis}t$, u_{vis} being the visible flame velocity. The maximum concentrations of ions in the flame measured by two different method. are greater, by three or four orders of magnitude, than the thermodynamic equilibrium concentration calculated from the Saha equation. This fact indicates that the ions in

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Study of ionization in...

the flames are immediately generated at the expense of the energy from the chemical elementary processes, and not by thermal ionization of the combustion products. The descending part of the concentration curve gives 10^{-7} cm^3/sec for the recombination coefficient. The diffusion coefficient D for the combustion products of hydrocarbons with ambipolar electron diffusion is $D \cong 20$ cm^2/sec at $p = 1$ mm Hg and 0^oC. The highest importance attaches to the convective term of the steady-state equation, followed by the recombination term, and lastly by the diffusion term. The boundary of the region in which ions are produced coincides almost with x_{max} in the current oscillogram. Here, the probe has zero potential with respect to the plasma. At subatmospheric pressures, the pressure dependences read $\delta \sim p^{-0.8}$ for the flame zone width, $\tau_{react} \sim p^{-0.7}$ for the reaction time, $W \sim p^{1.7}$ for the mean reaction rate, and $u \sim p^{-0.15}$ for the flame velocity. V. P. Karpov assisted in designing the experimental apparatus. There are 8 figures and 2 tables.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR, Moskva (Institute of Chemical Physics AS USSR, Moscow)

S/057/62/032/009/007/014
B125/B186

Study of ionization in...

SUBMITTED: April 8, 1961 (initially)
June 25, 1961 (after revision)

Fig. 7. Structure of the flame reaction zone. Mixture containing 4.16% propane. Probe diameter 0.2 mm, p = 1 atm. N = ion concentration. Legend: q = ionization rates; T = temperature; j_o = current density in the probe at $U_3 = U_{3_o}$.

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S/057/62/032/009/007/014
B125/B186

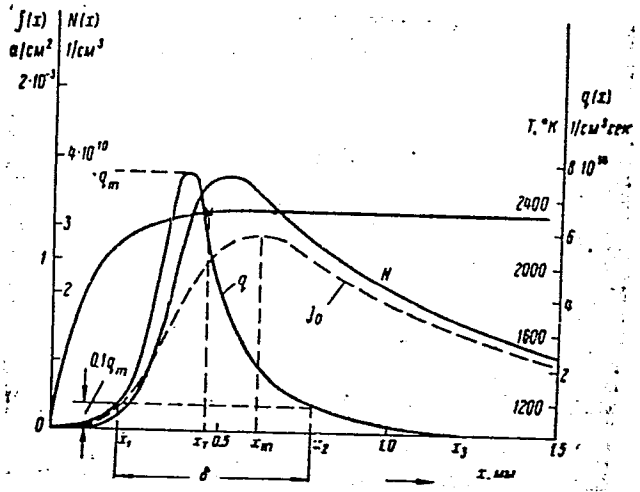

Fig. 7

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S/020/62/145/002/015/018
B145/B101

AUTHORS: Semenov, Ye. S., and Sokolik, A. S.

TITLE: Characteristics of spherical flames in the state of formation

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 2, 1962, 369-372

TEXT: The characteristics of a flame in the state of formation were studied with a propane - air mixture (4.16% C_3H_8) at 250 mm Hg in a spherical bomb of 180 mm in diameter and ignition in the center. The velocity of flame propagation was measured by schlieren photography, the ionic current i was measured oscilloscopically with a single electrode probe (potential: 2 v) described earlier (ZhTF, 32, no. 9 (1962)) at the distance r = 10-30 mm from the point of ignition. The time dependence of the ion concentration N was obtained from the oscillographs of i at various r values. From this, the concentration at the distance x from the beginning of the ion formation zone was calculated by the apparent velocity U_v of flame propagation. The rate q of ion formation and thus also the profile q(x) were calculated from the equilibrium equation for

Card 1/3

Characteristics of spherical flames ...

the ions, since $\partial N/\partial t$ proved to be sufficiently small and could be put equal to zero even at small r values. The width δ of the reaction zone was calculated directly by means of U_v. δ increases as the point of ignition is approached, and exceeds the stationary value (1.2 mm at $r \geq 35$ mm) by almost the tenfold at r = 10 mm. At the same time, q_{max} is reduced to 20-25% at r = 10 mm. Conclusions: In the state of formation the radius of the spherical flame has the same order of magnitude as the radius of the reaction zone. As soon as the radius of the reaction zone can be compared with the radius of curvation of the flame, the volume of the reacting gas is smaller than that of the heat-absorbing gas and the temperature is lower than the adiabatic temperature of the plane flame (with r = 10 mm, the difference is 250-300°C). Thus, the rate of combustion decreases. The values of the plane flame are reached but gradually. There are 4 figures. The English-language references are: E. F. Fiock, Ch. F. Martin, Jr., Chem. Rev., 21, 367 (1937); E. F. Fiock, Ch. F. Martin, Jr. et al., Nat. adv. comm. for aeronautics, Rep. no. 682 (1940).

Card 3/ Card 2/3

L 13809-65 EPA/EWT(l)/EPA(s)-2/EWT(m)/EPF(c)/EPR/EPA(w)-2/EWP(j)/EEC(t)/T/EWA(m)-2
Pc-4/Paa-4/Pab-10/Pr-4/Ps-4/Pt-10 IJP(c)/SSD(a)/AFETR/AEDC(b)/AEDC(a)/AS(mp)-2/
ASD(d)/SSD/BSD/AFWL/AFTC(p)/ESD(t) WW/JW/JWD/RM

ACCESSION NR: AP4042597 S/0076/64/038/007/1784/1790

AUTHOR: Sokolik, A. S. (Moscow); Semenov, Ye. S. (Moscow) 15 B

TITLE: The nature of the chemical ionization of flames

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 7, 1964, 1784-1790

TOPIC TAGS: hydrocarbon flame, ionization, chemical ionization, flame reaction, turbulent flame, laminar flame, detonation wave, combustion mechanism, thermal ionization, combustion

ABSTRACT: The most probable ionization mechanism in the reaction zone of hydrocarbon flames, $CH + O \rightarrow CHO^+ + e$, is based on the transport of active centers, mainly H atoms, within the reaction zone. The subsequent transfer of the proton to water: $CHO^+ + H_2O \rightarrow CO + H_3O$ is favored by small activation energy for the reaction, the short life of the CHO^+ ion, and the abundance of H_3O^+ in the system. The original CH radical had been formed by the reaction $CC + OH \rightarrow CH + CO$. The role played by diffusion exchange in the reaction zone is confirmed by results of the present investigation of the ionization in tur-

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bulent flames, which showed that the velocity pulsations are accompanied by fluctuations in the ionization current, and the maximum amplitude of the turbulent ionization current considerably exceeds (by 10-20 times) that of a laminar flame at the same temperature and increases with increased turbulence. Analysis of the available data on ionization in a detonation wave of hydrocarbon-oxygen mixtures leads to two alternative concepts of the combustion mechanism in a detonation wave: (1) in which chemical ionization is absent, or (2) where at a high level of thermal ionization the weaker chemical ionization is masked. The choice of one of these is possible from results obtained from ionization studies in the reaction zone of high temperature hydrocarbon-oxygen flames; if detonative combustion is a homogeneous reaction developed throughout the entire volume of the compressed gas, chemical ionization is not possible. If the process includes the formation of one or more reaction sites and the remaining volume of the compressed gas in the detonation wave is enclosed by the flame, either laminar or turbulent, then chemical ionizationccan originate in the reaction zone of the detonation wave. Orig. art. has: 7 figures and 4 equations.

L 13809-65
ACCESSION NR: AP4042597

ASSOCIATION: Akademiya nauk SSSR Institut khimicheskoy fiziki (Academy of Sciences SSSR, Institute of Chemical Physics)

SUBMITTED: 20Aug63 ENCL: 00

SUB CODE: FP, GC NO REF SOV: 004 OTHER: 009

Card 1/3

L 6424-66 EPA/EPA(s)-2/EWT(m)/EPF(c)/EWP(f)/T/EWA(c)/ETC(m) WW/JW/JWD/WE

ACC NR: AP5026070 SOURCE CODE: UR/0405/65/000/002/0083/0092

AUTHOR: Semenov, Ye. S. (Moscow)

ORG: None

TITLE: The determination of turbulent characteristics in closed volumes during artificial agitation

SOURCE: Nauchno-tekhnicheskiye problemy goreniya i vzryva, no. 2, 1965, 83-92

TOPIC TAGS: turbulent combustion, combustion gas dynamics, heat of combustion, turbulent heat transfer, turbulent flow, gas flow

ABSTRACT: The present paper 1) determines the dependence of the Lagrange turbulence scale L, and its intensity on turbulence and other factors under the specific conditions of a closed volume used to study the new model of turbulent combustion; and 2) estimates the turbulent diffusion in chemical devices which employ different means for mixing. Following a discussion of the characteristics of gas velocity measurements in closed volumes, the author discusses the measurement of the Euler turbulence L_2 scale by means of the electrothermoanemometer pulsating component measurement on the ASChKh analyzer, and the determination of turbulent diffusion and turbulent scale from the heat transfer data. Results show that 1) due to the unique gas motion within a closed volume, all three pulsating velocity components cannot be determined by means of single working-filament electrothermoane-

UDC: 532.507

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ACC NR: AP5026070

8

mometers; 2) the quantitative determination of the spacial Euler scale is only approximate, whereas the Lagrange scale decreases with the increase in turbulence; L_1 depends on pressure through the factor $p^{-0.4}$ and is almost independent on the molecular properties of the gas; 3) L_2 for closed volumes is 1/3 to 1/4 that of L_2 in the case of a directed flow; and 4) whenever L_1 exceeds the width of the laminar combustion zone the heat and mass transfer during turbulent combustion occurs through pulsations which significantly transcend the laminar combustion zone width. Orig. art. has: 1 formula, 8 figures, and 2 tables.

SUB CODE: TD, ME / SUBM DATE: 02Nov64 / ORIG REF: 006 / OTH REF: 003

8C

Card 2/2

L 1715-66 EPA/EWT(m)/EPF(c)/ETC/EWP(f)/EWG(m)/EWP(j)/T/EWA(c)/ETC(m) RPL
DS/BW/WW/WE/RM
ACCESSION NR: AP5023687 UR/0076/65/039/009/2202/2207
541.126

65
62
B

AUTHOR: Sokolik, A. S.; Semenov, Ye. S.

TITLE: Study of macrokinetic characteristics of turbulent propane flames by ionization current measurements

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 9, 1965, 2202-2207

TOPIC TAGS: turbulent combustion, combustion, propulsion, combustion theory, ion current

ABSTRACT: Turbulent combustion of homogeneous gas mixtures was studied theoretically and by experiments in which the ionization currents of propane-air flames were recorded using an oscillograph. The mean pulsation periods θ_1 were found to be fully independent of the chemical nature of the fuel, the air-fuel ratio, and the combustion temperature. This proved that θ_1 is controlled by turbulence characteristics only. The oscillograms also showed longer intervals θ_2 between the instants when the ionization current decreases to zero, i.e., the periods of combustion between flame extinctions at the given measuring point. The mean reaction time $\bar{\tau}_r$ can be calculated from the mean value of $\bar{\theta}_2$ by the formula $\bar{\tau}_r = \bar{\theta}_2 \frac{\varepsilon + 1}{2}$, where ε is the

Card 1/2

L 1715-66
ACCESSION NR: AP5023687

volumetric expansion of the combustion mole. By comparing $\bar{\tau}_r$ at various temperatures and pressures, the macrokinetic characteristics, i.e., the effective reaction orders and activation energies, can be calculated. Therefore, the macrokinetic characteristics can be obtained by two completely independent methods: ionization current measurements as discussed above and turbulent burning velocity measurements based on the pulsating ignition model. Orig. art. has: 9 formulas and 6 figures. [PV]

ASSOCIATION: Institut khimicheskoy fiziki, Akademiya nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR)

SUBMITTED: 03Jun64 ENCL: 00 SUB CODE: FP
NO REF SOV: 008 OTHER: 001 ATD PRESS: 4095

L 33482-66 EWP(k)/EWT(d)/EWT(m)/EWP(h)/T/EWP(l)/EWP(v)/EWP(t)/ETI IJP(c)
ACC NR: AP6012169 SOURCE CODE: UR/0413/66/000/007/0099/0099
DJ/JD

INVENTOR: Glazkov, A. V.; Semenov, Ye. S.; Dolgushin, P. G.; Kuleshov, B. S.; Rumyantsev, Yu. S.; Shcherbak, M. V.

45
47
B

ORG: none

TITLE: Device for electrochemical treatment of parts. Class 49, No. 180471

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 7, 1966, 99

TOPIC TAGS: electrochemical treatment, ~~part treatment~~ ELECTROCHEMISTRY, ELECTROLYTE, PHYSICAL CHEMISTRY INSTRUMENT

ABSTRACT: An Author Certificate has been issued describing a device for the electrochemical treatment of parts in a closed working chamber with the electrolyte pumped through and with a hydraulic-drive feed for the electrode tool having a followup system actuated by changes in electrolyte pressure at both the intake and outlet of the chamber. To increase the sensitivity and reliability of the followup system, the control unit is a single-coordinate hydraulic tracking slide with a variable diaphragm affected by the electrolyte pressure in the working chamber. (see Fig. 1) [LD]

Card 1/2 UDC: 621.9.047.7

L 33482-66

ACC NR: AP6012169

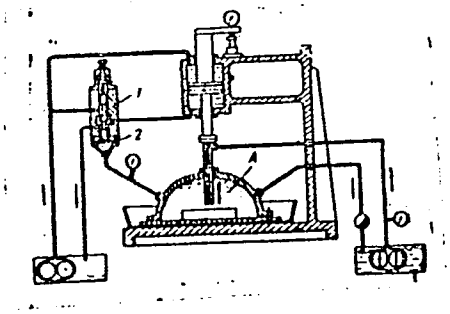

Fig. 1. Device for electrochemical treatment of parts. 1— slide; 2— diaphragm; A— working chamber

Orig. art. has: 1 figure.

SUB CODE: 13,07/ SUBM DATE: 16Mar64

18

Electrolytic machining

Card 2/2 JS

21(7)
AUTHORS: Boltaks, B. I., Plachenov, B. T., Semenov, Ye. V.

SOV/20-123-1-18/56

TITLE: On the Absorption Coefficient of γ-Rays of Co^{60} in Semiconductors (Co^{60} koeffitsiyente pogloshcheniya γ-luchey Co^{60} v poluprovodnikakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 1, pp 72-75 (USSR)

ABSTRACT: The present paper gives the results of measurements of the γ-ray absorption coefficient of Co^{60} ($E_{\gamma 1}$ = 1.17 MeV, $E_{\gamma 2}$ = 1.33 MeV) in some semiconductor materials of different degrees of purity and different modifications as well as in some metals (Al, Zn, Pb). Measurements were carried out with respect to these metals mainly for the purpose of checking the experimental method. The measuring apparatus used is schematically shown in form of a drawing. The measuring results are given in a table. The results obtained by the present paper differ from those obtained by other authors by not more than 3.5%. The absorption of γ-rays

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of Co^{60} in the materials under investigation is caused nearly entirely by Compton (Kompton) scattering. Photoelectric absorption is less than 1% in the case of most of the samples investigated. An exception was formed only by the Te, Pb and PbTe samples; the share of photoelectric absorption in them amounted to ~8, ~25 and ~15% respectively. The absorption coefficient values given in the table were calculated by means of the usual formulae of the theory of the absorption of γ-rays in matter. The difference between measured and calculated absorption coefficients is larger in semiconductors than in metals. Besides, the absorption coefficient also of infinitesimally small concentrations depends on impurities in the investigated semiconductors (and in selenium also on structure, i.e. on the modification of the sample). Semiconductors differ from metals mainly by the concentration of the free current carriers. The authors determined the temperature dependence of absorption on γ-rays in the case of some samples of germanium, silicon, and tellurium with different degrees of purity and different characters of conductivity.

On the Absorption Coefficient of γ-Rays of Co^{60} in Semiconductors SOV/20-123-1-18/56

On the same samples the Hall (Kholl) effect was measured, and the variation of the concentration of current carriers in the investigated temperature interval was determined. The results of these investigations, which are shown by 2 diagrams, make it perfectly clear that the absorption coefficient of Co^{60} γ-rays increases in the semiconductors under investigation in proportion to the concentration of the free current carriers. A similar dependence holds also if Sn^{113} serves as a source of the γ-rays. The results obtained do not agree with the present theory of Compton (Kompton) scattering (in which binding of the electrons in atomic electron shells is neglected). Therefore, these results ought to be subjected to careful theoretical analysis. The authors thank V. A. Sokolova for her help in carrying out measurements. There are 4 figures, 2 tables, and 4 references, 1 of which is Soviet.

ASSOCIATION: Institut poluprovodnikov Akademii nauk SSSR (Institute for Semiconductors of the Academy of Sciencee, USSR)

Card 3/4

SEMENOV, Ye.V. (Moskva)

A problem in the hydrodynamic theory of stability in case of a varying viscosity. Izv. AN SSSR Mekh. i mashinostr. no.4:161-165 '64
(MIRA 17:8)

L 22218-65 EWT(l)/EWP(e)/EWA(d)/FCS(k)/EWA(l) Pd-l AFWL/AEDC(a)/SSD/ ASD(f)-3

ACCESSION NR: AP5002609 S/0179/64/000/005/0165/0167

AUTHOR: Semenov, Ye. V. (Moscow)

TITLE: Wave growth on film surfaces with variable viscosity, overflown by a gas stream

SOURCE: AN SSSR. Izvestiya. Mekhanika i mashinostroyeniye, no. 5, 1964, 165-167

TOPIC TAGS: viscous fluid flow, flow stability, Reynolds number, gas flow, instability wave

ABSTRACT: The behavior of perturbation waves on the surface of a thin layer $0 \leqslant y \leqslant h$ of heavy viscous liquid at a steep but constant temperature gradient in a streamlined hot gas stream was studied analytically. In Fig. 1 on the Enclosure, subscripts 2 indicate points within the gas stream, subscript 1 pertains to the dividing surface, and no-subscript to the inside of the fluid. For definitiveness, the gas flow is assumed to occur on an infinite plate $y = H >> h$ and to move at a constant speed. It is assumed that $U_2 = U_2(y)$, $V_2 = 0$ and that the pressure distributions in the gas and liquid are given by $P = P - \rho g (y - h)$, $P_2 = P_1 - \int_h^y \rho_2(y)\, g\, dy$.

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L 22218-65

ACCESSION NR: AP5002609

At the interface, $U_1 = U_2$ and the tangential stress is continuous. Each variable is represented as the sum of a steady and a small perturbed component, e.g., $u = U + u'$ where $\mu_1' = \delta u_1(y) e^{i\alpha(x-ct)}$. Nondimensional coordinates are introduced, among which are $\mu_2/\mu_1 = m$ and $\rho_2/\rho_1 = r$. The Orr-Sommerfeld equation is given for the stream function amplitude φ, and a linearized momentum equation is written for the small perturbations in the gas stream. For $c \neq U$, these equations are combined to yield a fourth order linear equation in φ $\left[M\varphi = \frac{i\alpha^3(v-1)}{\alpha R_1} L^{(4)}\varphi\right]$ with the product solution $\varphi(y) = \sum_{n=0}^{\infty} \lambda^n \varphi_n(y)$ $(\lambda = \alpha R_1 e^{-\beta})$. This leads to a set of ordinary differential equations whose solution was carried out numerically on the computer "Strela." For $\beta = 3$, a minimum Reynolds number was obtained in the range $1 \leqslant R_* \leqslant 1.5$. Orig. art. has: 17 equations and 2 figures.

ASSOCIATION: none

SUBMITTED: 26Feb64 ENCL: 01 SUB CODE: ME

NO REF SOV: 002 OTHER: 001

Card 2/3

SEMENOV, Yu., arkhitektor

From the experience in the design of the interior of food industry enterprises. Tekh.est. 2 no.12:16-18 D '65.
(MIRA 19:1)

1. Moskovskoye spetsial'noye khudozhestvenno-konstruktorskoye byuro.

L 36378-66 EWT(m)/T

ACC NR: AP6017591 SOURCE CODE: UR/0367/66/003/002/0321/0326

AUTHOR: Vishnevskiy, M. Ye.; Galanina, N. D.; Semenov, Yu. A.; Kruptchitskiy, P. A.; Berezin, V. M.; Murysov, V. A.

52
41
B

ORG: none

TITLE: Measurement of the mass difference of K_2^0 and K_1^0 mesons 19

SOURCE: Yadernaya fizika, v. 3, no. 2, 1966, 321-326

TOPIC TAGS: K meson, mass spectrometry, pion, meson interaction

ABSTRACT: In view of the discrepancies between the experimentally measured mass differences of the K_2^0 and K_1^0 mesons, the authors have measured this mass difference by a coherent regeneration method, based on measurement of the dependence of the intensity of the coherent regeneration of K_1^0 mesons in a beam of K_2^0 mesons on the thickness of the regenerator (copper or aluminum). The experiment was carried out in the ITEF 7-Gev proton accelerator (Fig. 1). The method and the apparatus are briefly described. The K_1^0 mesons were registered by means of the $K_1^0 \rightarrow \pi^+ + \pi^-$ decay with the aid of a magnetic spectrometer with scintillation counters and spark chambers. The distributions of the interaction events with respect to the masses of the decaying particle and with respect to the angle between its momentum and primary-beam directions are given. A total of 196 coherently-regenerated K_1^0 mesons were found in 375 tracks. A mass difference of 0.82 ± 0.14 $(\hbar/\tau_1 c^2)$, where $\tau_1 = 0.92 \times 10^{-10}$ sec, was obtained. The distribution of the registered K_1^0 mesons had a maximum at 1.8 Gev/c and dropped to zero at 0.9 and 4 Gev/c. This result agrees well with those obtained by others

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L 36378-66

ACC NR: AP6017591

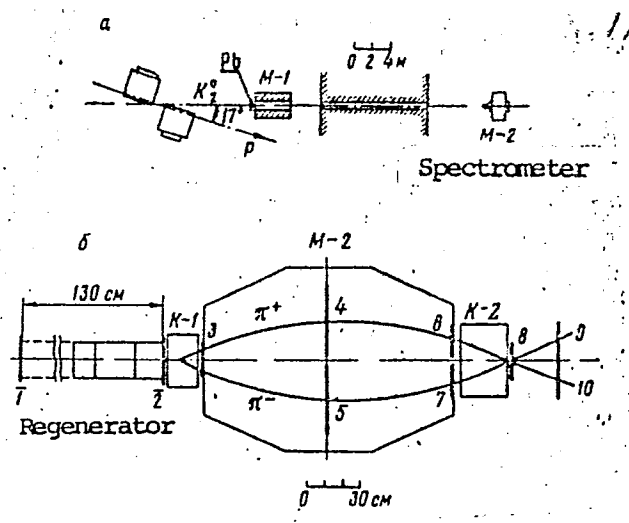

Fig. 1. Experimental setup. a - Beam diagram, b - magnetic spectrometer diagram (the numbers denote particle counters).

using similar methods. The authors thank A. I. Alikhanov and S. Ya. Nikitin for interest in the work, L. B. Okun' and I. Yu. Kobzarev for discussions, L. L. Gol'din and his crew for operating the accelerator, and A. K. Dubasov, V. N. Markizov, N. P. Naumov, V. F. Stolyarov, V. N. Kuz'menkov, and Yu. S. Oreshnikov for help with the apparatus and the measurements. Orig. art. has: 4 figures and 1 formula.

SUB CODE: 20/ SUBM DATE: 30Jun65/ ORIG REF: 003/ OTH REF: 006

Card 2/2 ns/

SEMENOV, YU A.

AUTHORS: Pivovarov, G. Ya., Semenov, Yu. A. 48-22-5-22/22

TITLE: Some Technological Methods in the Reduction of Leakage Currents: Cathode Heater (Nekotoryye tekhnologicheskiye sposoby umen'shen-iya tokov utechki; katodpodogrevatel') Data From the VIII-th All-Union Conference on Cathode-Electronics, Leningrad, October 17-24, 1957 (Materialy VIII Vsesoyuznogo soveshchaniya po katodnoy elektronike, Leningrad, 17-24 oktyabrya 1957 g.)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1958, Vol. 22, Nr 5, pp. 642-644 (USSR)

ABSTRACT: Some waste in the production of receiver-amplifier values and of other apparatuses with a heatable cathode is due to the cause mentioned in the title. There are various causes for such currents and their magnitudes are variable. In this investigation the following factors were stressed: purity of the inner surface of the cathod cores, the granular composition of the alundum, admixtures occuring in the alundum and the time necessary to secure a proper performance of the valve. The purpose of the investigation was purely functional and it was done under working conditions on super-miniature valves. In the beginning of the production of these valves 6D6A

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(diameter of cathode core o,6 mm), a high percentage of waste resulted from leakage currents: cathode-heater. About 6o% of the heaters had drops of nickel on the surface (figure 1) which also caused short circuits. As ultrasonic cleaning of the cores in trichloroacetic ethylene has eliminated this phenomenon almost entirely, lessening the waste by 4o %. The structure of the alundum is known to influence the quality of heaters which have been produced in the "railroad" method, considerably. The grain sizes of the micro-powder (alundum) were, according to the author's wish, reduced to 2 - 3, 5 - 7 and 1o - 14μ by the producer. The figure 3 shows the results of the tests of heaters with the former and latter grain sizes of the valve 6Zh1B, as far as the duration of the working phase in concerned. With fine alundum the amount of leakage current rises up to 19 or 11 μA_3 respectively with positive or negative polarity, with coarser alundum it is 9 and IμA. Chemical admixtures affect both the quality of alundum-suspension for the cataphoretical method of application and the said leakage currents. Charac-

teristics of the alundum lots are given in the table (p.643) A greater quantity of admixtures leads to a rise of the electric conductivity of alundum in water. Unsatisfactory lots of alundum could be purified form admixtures by twice-repeated cooking in distilled water and heating up to 850 - - 900°C. In conclusion data on the burning-in of the valves are given (by A.R. Shul'man). -K.G. Kondrashova, Fridkhov (Frid.), B.I. Vasserman, O.Ya. Mlodik, I.I. Pepenova and the first author joined in the discussion. There are 3 figures, 1 table, and 1 reference.

1. Filaments--Effectiveness 2. Filaments--Coatings 3. Electron tubes--Efficiency 4. Sintered aluminum coatings--Properties

SEMENOV, Yuriy Anatol'yevich; KAUFMAN, M.S., red.; YEMZHIN, V.V., tekhn. red.

[Manufacture of cathode heaters for vacuum devices]Proizvodstvo podogrevatelei katodov elektrovakuumnykh priborov. Moskva, Gosenergoizdat, 1962. 134 p. (MIRA 15:9)
(Electron tubes) (Cathodes)

KHACHATUROV, Khristofor Georgiyevich; LYNDIN, Nikolay Ivanovich; SEMENOV Yuriy Aleksandrovich; BASOK, Semen Izrailevich; FAVORSKIY, V.Ye., red.; ALABYSHEVA, N.A., red.izd-va; GVIRTS, V.L., tekhn. red.

[Practices of the "Avtoarmatura" Plant in the bending of contacts and the efficient organization of die storage] Opyt zavoda "Avtoarmatura" po gibke kontaktov i ratsional'noi organizatsii khraneniia shtampov. Leningrad, 1963. 11 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Goriachaia i kholodnaia obrabotka metallov davleniem, no.7) (MIRA 17:3)

L 1962-66 EWT(m)/T/EWA(m)-2

ACCESSION NR: AT5024122 UR/3138/65/000/348/0001/0015

AUTHOR: Vishnevskiy, M. Ye.; Galanina, N. D.; Semenov, Yu. A.; Krupchitskiy, P. A.; Berezin, V. M.; Murysov, V. A.

TITLE: Measurement of the difference in the masses of K_2^0- and K_1^0- mesons

SOURCE: USSR. Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii. Institut teoreticheskoy i eksperimental'noy fiziki. Doklady, no. 348, 1965. Izmereniye velichiny raznosti mass K_2^0- and K_1^0, 1-15

TOPIC TAGS: meson beam, K meson, pi meson

ABSTRACT: The value of the difference in the masses of K_2^0- and K_1^0-mesons was obtained by measuring the dependence of the intensity of coherent regeneration of K_1^0-mesons in a beam of K_2^0-mesons on the thickness of the regenerator (copper and aluminum). K_1^0-mesons were recorded on the basis of the decay $K_1^0 \to \pi^+ + \pi^-$ with the aid of a magnetic spectrometer with scintillation counters and spark chambers. The distributions of the events over the mass of the decaying particle and angle between its momentum and the direction of the primary beam are given. In all, 196 events of coherently regenerated K_1^0 mesons were recorded. The value $\Delta m = (0.82 \pm 0.14)\hbar/\tau_1 c^2$ was obtained. "The authors thank Academician A. I. Alikhanov and

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L 1962-66
ACCESSION NR: AT5024122 10

S. Ya. Nikitin for their interest in the work, L. B. Okun' and I. Yu. Kobzarev for their discussion, L. L. Gol'din and members of the technical staff for supervising the operation of the accelerator, and A. K. Dubasov, V. N. Markizov, N. P. Naumov, V. N. Kuz'menkov, and Yu. S. Oreshnikov for assistance in setting up the apparatus and for carrying out the measurements." Orig. art. has: 4 figures, 1 formula.
ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki, Gosudarstvennyy komitet po izpol'zovaniyu atomnoy energii (Institute of Theoretical and Experimental Physics, State Committee for Application of Atomic Energy)
SUBMITTED: 16Apr65 ENCL: 00 SUB CODE: NP

NO REF SOV: 005 OTHER: 005

Card 2/2

SEMENOV, Yu. D.

SMIRENSKAYA, Ye.M.; SEMENOV, Yu.D.

Forcing blood into an artery in intrathoracic surgery. Sov.med. 21 Supplement:11-12 '57. (MIRA 11:2)

1. Iz fakul'tetskoy khirurgicheskoy kliniki II Moskovskogo meditsinskogo instituta imeni I.V.Stalina.
(CHEST--SURGERY)

DYUKOV, L.M.; VOLKOV, V.I.; SEMENOV, Yu.D.

Evaluating the drillability of rocks on the basis of geophysical data. Trudy VNIIBT no.14:106-112 '65. (MIRA 18:5)

SEMENOV, Yu. I.

"Gruppovoy brak, yego priroda i mesto v evolyutsii semeyno-brachnykh otnosheniy."

report submitted for 7th Intl Cong, Anthropological & Ethnological Sciences, Moscow, 3-10 Aug 64.

MITYUSHKIN, Yu.I.; SEMENOV, Yu.I., student; SHITKOV, V.N., student

Compressible gas flow through an axial nozzle tip with cooled blading. Trudy LKI no.34:151-158 '61. (MIRA 15:8)

1. Kafedra sudovykh parovykh i gazovykh turbin Leningradskogo korablestroitel'nogo instituta (for Mityushkin). 2. Mashinostroitel'nyy fakul'tet Leningradskogo korablestroitel'nogo instituta (for Semenov, Shitkov).

(Marine gas turbines)

ACCESSION NR: AR4021745 S/0285/64/000/002/0012/0013

SOURCE: RZh. Turbostroyeniye, Abs. 2.49.75

AUTHOR: Mityushkin, Yu. I.; Semenov, Yu. I.; Shitkov, V. N.

TITLE: Gas flow through cooled guide-vane assemblies with a variable temperature field at the intake

CITED SOURCE: Tr. Leningr. korablestroit. in-ta, vy*p. 39, 1962, 91-97

TOPIC TAGS: gas turbine engine, guide vane assembly, turbine vane, turbine cooling, gas-flow calculation

TRANSLATION: To strengthen the operating vanes it is advisable in certain gas turbine engine designs to increase the gas temperature from the base towards the tip of the vanes. The calculations of the gas flow through a cooled guidevane assembly take into account the variation of the temperature field at its intake. Under study is the steady axially-symmetric flow of compressed gas passing with friction through a guide-vane assembly from the cooled vanes. The gas flow is assumed to be cylindrical; the distribution of the parameters at the intake of

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ACCESSION NR: AR4021745

the guide-vane assembly is known. The presented method makes it possible to calculate the field of velocities at the outlet of a cooled guide-vane assembly equipped with arbitrarily twisted vanes, when the temperature field varies at the inlet to the turbine's stage and the drop in total pressure varies along the radius. It is noted that due to the rather small relative length of turbine blades ($\ell/D_{average}$ = 1/8-1/12) in high-pressure gas-turbine engines used on ships and due to the insignificant change in the angle of torsion α_1 and in the flow losses η_1 taking place along the height of the vanes, it can be assumed that both α_1 and η_1 are constant along the radius. No cooling is required for nozzle vanes made of ceramic or metallo-ceramic materials. This fact simplifies considerably the derived equations. In this article are given the results of calculating the field of velocities at the outlet of a cooled and an uncooled guide-vane assembly for various laws governing the change in temperature along the height of the vanes. On the basis of these results it is shown that for acceptable quantities of air used to cool the nozzle vanes (2% of the air passing through the engine) and for high gas temperatures it is practically possible to disregard the lowering of the gas temperature resulting from the cooling at the

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ACCESSION NR: AR4021745

outlet of the guide-vane assembly. In this case the velocity planes and their distribution over the height of the vanes are practically the same with and without cooling. It is noted that the unsteadiness of the temperature field at the intake changes substantially the field of velocities at the outlet of the guide-vane assembly and requires an appropriate shaping of the operating vanes. There are 2 illustrations and a bibliography of 4 titles. V. Tenyakov.

DATE ACQ: 05Mar64 SUB CODE: AI, PR ENCL: 00

Card 3/3

S/119/63/000/003/010/010
D201/D308

AUTHORS: Bilan, N.A. and Semenov, Yu.I.

TITLE: A large time-constant high stability timer

PERIODICAL: Priborostroyeniye, no. 3, 1963, 25-26

TEXT: The arrangement described consists of two p-n-p triode transistors, with the base of the second transistor directly coupled to the collector of the first. The emitter of the second transistor is connected to a potential divider, at exactly half of the supply voltage level, the timing capacitor being connected between the collector of the first and emitter of the second transistor, the relay constituting the collector head of the latter. The operating switch connects the base of the first transistor to earth. With the switch open the timing capacitor remains charged to half of the supply voltage and discharges only with the first transistor conducting, at a rate depending on the parameters of the circuit. The above arrangement has operating times up to 387 sec. with a 12 volt, and up to 376 sec. with a 24 volt supply and the timing

Card 1/2

S/119/63/000/003/010/010
D201/D308

A large time-constant

remains constant within 2% for a supply voltage variation of 5%.
There are 2 figures and 1 table.

Card 2/2

SEMENOV, Yu.I., KRASNOV, I.A.

Organization of compound work using diagram charts. Prom. stroi. 42 no.1:13-15 '65. (MIRA 18:3)

1. Rostovskiy Promstroyniiproyekt (for Semenov).

0921 0012

L 17121-66 EWT(d)/EWP(1) IJP(c) BB/GG

ACC NR: AR6016026 SOURCE CODE: UR/0271/66/000/001/B039/B039

AUTHOR: Semenov, Yu. I.; Kharitonov, A. G.; Savel'yev, A. V.; Prozorov, Yu. P.

TITLE: Analysis of analog—code information converters

SOURCE: Ref. zh. Avtomat. telemekh. i vychisl. tekhn., Abs. 1B278

REF SOURCE: Novyye sredstva avtomatiz. dlya ugol'n. prom-sti. Vyp. 2. Kiyev, Tekhnika, 1964, 192-202

TOPIC TAGS: converter circuit, converter, analog converter

ABSTRACT: After a brief review of existing types of analog—code converters a converter circuit is described which operates according to the principle of comparing the imput voltage with the standard sawtoothed variable voltage. The dynamic balance method is applied in the circuit. Single elements are described and the converter's precision is analyzed. Orig. art. has: 6 figures. Bibliography of 4 titles. [Translation of abstract] [NT]

SUB CODE: 09/

Card 1/1 UDC: 681.142.621

L 47124-66 EWT(d)/EWP(1) IJP(c) BB/GG

ACC NR: AR6016010 SOURCE CODE: UR/0271/66/000/001/A008/A008

53
B

AUTHOR: Semenov, Yu. I.; Goryachikh, G. A.; Kharitonov, A. G.

TITLE: Semiconductor shift register 16

SOURCE: Ref. zh. Avtomat. telemekh. i vychisl. tekhn., Abs. 1A49

REF SOURCE: Sb. Novyye sredstva avtomatiz. dlya ugol'n. prom-sti. Vyp. 2. Kiyev, Tekhnika, 1964, 209-214

TOPIC TAGS: semiconductor device, shift register, time relay, semiconductor triode

ABSTRACT: The proposed shift register is made according to a closed circuit with a time relay without requiring external propelled pulses. The shift register is used in equipment where the cophased motion of distributor is not needed, for example, in centralized control systems. The specific feature of register elements, assembled with a P16 type semiconductor triode is the high stability of time lag which is achieved by special switching of the capacitor. The time lag is ~100 sec with fluctuations within 2% for changes in input voltage from +10 to -20%. Orig. art. has: 5 figures. Bibliography of 2 titles. [Translation of abstract] [NT]

SUB CODE: 20/

Card 1/1 LS UDC: 62-52:621.374.36

PYATYSHKIN, N.M., kandidat tekhnicheskikh nauk; SEMENOV, Yu.K.; DOBKIN, G.I.

Modernizing a standard vertical furnace for burning peat. Energetik 2 no.1:3-8 Ja '54. (MLRA 7:1)
(Furnaces)

SEMENOV, Yu.K., inzh.

Maintenance of magnetic compasses and their use on ships employed in inland navigation. Rech.transp. 18 no.6:52-53 Je '59. (MIRA 12:9)

(Compass) (Inland navigation)

GALKOVSKAYA, M.G., kand.tekhn.nauk; NAUMOV, A.I.; PYATLIN, A.A.; SVIRIDOV, A.A.; SEDOV, F.G.; KHODUNOV, M.Ye., kand.yurid.nauk; SHANCHUROV, P.N., kand.tekhn.nauk; SOYUZOV, A.A., prof., doktor tekhn.nauk, red.; GOLOVNIKOV, V.I., kand.tekhn.nauk, red.; ZOTOVA, V.V., kand.tekhn.nauk, red.; SEMENOV, Yu.K., red.; ALEKSEYEV, V.I., red.izd-va; YERMAKOVA, T.T., tekhn.red.

[River navigator's manual] Spravochnik shturmana rechnogo flota. Pod obshchei red. A.A.Soiuzova. Moskva, Izd-vo "Rechnoi transport," 1960. 631 p. (MIRA 13:7)
(Inland navigation)

VALITOV, R.A.; SEMENOV, Yu.L.

Stabilizing the frequency of oscillators equipped with semiconductor triodes by titanium dioxide and barium titanate capacitors. Poluprov. prib. i ikh prim. no.2:383-385 '57. (MIRA 11:6)
(Oscillators, Transistor)

SEMENOV, Yu.L.

Geology and age of the Chul'kyzylskiy Massif of ultrabasic rocks in the Balkhash region. Sov.geol. 3 no.10:122-128 O'60. (MIRA 13:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskiy institut.
(Balkhash region--Geology)

SEMENOV, Yu.L.

Discovery of garnet-olivine rocks in the northeastern part of the Lake Balkhash region. Sov. geol. 4 no.11:145-148 N '61. (MIRA 14:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskiy institut.

(Balkhash Lake region--Garnet)

MIKHAYLOV, N.P.; SEMENOV, Yu.L.

Karaturgay picrite-diabase complex in Kazakhstan and some problems in the petrology of picrites. Sov. geol. 8 no.3: 43-58 '65. (MIRA 18:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskiy institut.

ACC NR: AP6033520 SOURCE CODE: UR/0413/66/000/018/0159/0159

INVENTOR: Selivanov, M. P.; Turbin, B. G.; Levin, L. P.; Semenov, Yu. M.; Ugryumov, M. S.; Shvedunenko, L. A.; Sosul'nikov, G. B.

ORG: none

TITLE: Electromechanic signal converter. Class 62, No. 186296

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 18, 1966, 159

TOPIC TAGS: electromechanic converter, electromechanic signal converter, electromagnetic device, servomechanism, electrohydraulic servomechanism, electropneumatic servomechanism

ABSTRACT: The proposed electromechanical signal converter is intended primarily for electrical hydraulic and pneumatic servomechanisms. It contains a housing, a permanent-magnet electromagnetic device, pole pieces with adjustment screws, a coil and a portable system unit which includes an elastic element, an armature terminal, an operating slide element, and a magnetically permeable bushing. To improve operational reliability, ensure the possibility of operating in

Card 1/2 UDC: 629.19 629.135/138 629.132

ACC NR: AP6033520

corrosive liquids, and improve the dynamic properties of the converter, the operating slide element is hermetically separated from the electromagnetic device and by an air gap from the magnetically permeable bushing. The slide element and the armature are a single unit, and the sealing element also serves as the elastic element of the portable system. The adjusting screws are fixed to the poles of the permanent magnet so as to make it possible to use the converter for servo-mechanising with various output characteristics and in order to ensure the smooth tuning of converter characteristics [Translation]

SUB CODE: 09/SUBM DATE: 22Jul64/

Card 2/2

ACCESSION NR: AT4037709 S/2865/64/003/000/0396/0400

AUTHOR: Grishayenkov, B. G.; Zablotskiy, L. L.; Ostapenko, O. F.; Semenov, Yu. M.; Fomin, A. G.

TITLE: Methods of obtaining oxygen by electrolysis of water under weightless conditions

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy* kosmicheskoy biologii, v. 3, 1964, 396-400

TOPIC TAGS: electrolysis, space flight, weightlessness, water, oxygen, air regeneration, life support, closed ecological system, manned space flight

ABSTRACT: For space flights of more than one month duration, it seems promising to develop systems of air regeneration in the space vehicle cabin based on re-utilization of human body wastes. This would minimize the amount of material to be stored aboard the ship. Electrolysis of the water formed by vital activity would be utilized as a source of oxygen for such a system. Electrolysis under weightless conditions requires the removal of the gases(oxygen and hydrogen) formed and the maintenance of continuous contact between the electrodes and the

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ACCESSION NR: AT4037709

bulk of the electrolyte. This can be accomplished with the aid of centrifugal devices, or by using electrodes, diaphragms, and electrolytes with special chemical and physical properties. The latter method requires equipment which promises to be more economical, portable, simple, and reliable. The electrolysis of water may very soon become the basic method of supplying oxygen for manned space flights.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: PH, LS

NO REF SOV: 002 OTHER: 009

Card 2/2

ACC NR: AP6025800 SOURCE CODE: UR/0131/66/000/005/0052/0053

AUTHOR: Degtyarev, V. S.; Denisov, S. I.; Semenov, Yu. N.; Borodulin, P. Ya.

ORG: [Degtyarev, Denisov] Titanium Institute (Institut titana); [Semenov, Borodulin] Institute of Materials Science Problems, AN SSSR (Institut problem materialovedeniya AN SSSR)

TITLE: Boron carbonitride crucibles

SOURCE: Ogneupory, no. 5, 1966, 52-53

TOPIC TAGS: refractory compound, alundum, heat resistant material, chemical resistant material, temperature dependence, slag, boron nitride compound

ABSTRACT: In research studies on the reduction of molten iron-titanium concentrates by gases, the refractory material of the crucibles must withstand temperatures up to 1700°C and the chemical interaction of metal and slag. Tests were conducted on refractory crucibles made from porcelain, alundum, graphite, molybdenum, and boron carbonitride. Reduction of molten iron-titanium concentrates was carried out in a Tamman furnace under an inert gas to prevent burning during reduction. A schematic diagram of the apparatus is shown. The crucible, filled with a 50g charge, was placed on a graphite stand in the highest temperature zone and reducing gas was passed through a boron carbonitride tube which was inserted 5-10 mm into the melt. The effect of purging

UDC: 666.78

ACC NR: AP6025800

time, coefficient of excess gas, and process temperature on the degree of reduction were determined. The influence of the first two factors was studied at 1600°C. The chemical compositions of the concentrate and of final products are presented. As a result of purging with reducing gas, metallic oxides were reduced to the metallic state which deposited in the form of beads on the crucible walls. All of the refractory materials except boron carbonitride were unsatisfactory: porcelain and alundum cracked, graphite burned during reduction of the metallic oxides, and molybdenum dissolved in the melt. Boron carbonitride, which performed the best, was produced by nitriding compressed boron carbide. The boron carbide powder (3 to 40 μk) was composed of 73% boron, 20% combined carbon, and 2.5% free carbon. After drying, the powder was compressed under a pressure of 150-200 kg/cm^2 into crucibles, positioned in the Tamman furnace, filled with boron nitride powder, and nitrided at 1800-1900°C. The finished crucible contained 82-83% boron nitride, 17-18% graphite, and 18-22% porosity. The physical properties are given. During reduction of the iron-titanium concentrate at 1600--2000°C, the titanium slag and the metallic phase did not react with the crucible walls, except by wetting them. The crucibles made of boron carbonitride were heat resistant and did not crack after quenching in water from 1400°C. Orig. art. has: 1 figure, 1 table.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 002

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L 36978-66 EWP(k)/EWT(d)/EWP(h)/EWP(l)/EWP(v) BC

ACC NR: AP6008525 SOURCE CODE: UR/0280/66/000/001/0104/0109

AUTHOR: Semenov, Yu. V. (Leningrad) 41 B

ORG: none

TITLE: A method of synthesis of statistically optimal systems 14

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 1, 1966, 104-109

TOPIC TAGS: optimal automatic control, automatic control theory, circuit design

ABSTRACT: In conjunction with the selection of regulator parameters in systems of automatic control, the author develops a method of parametric synthesis of statistically optimum systems. The method utilizes the multiple linear regression equations, and the values of the control system parameters are selected in such a way that 1) the dynamical processes satisfy the complete system of limitations (usually given in inequality form) and 2) the quality criterion reaches its minimum while taking into account the statistical properties of the solutions of the original system of differential equations. The paper covers the optimization of the reference equation, the choice of parameters taking into account the form of the distribution of random perturbations acting on the system, and a comparison of the regression method with the usual calculations of gradient components. The method was tested successfully on a complex control system. Orig. art. has: 26 formulas.

SUB CODE: 09/ SUBM DATE: 13Jul64/ ORIG REF: 003/ OTH REF: 001

Card 1/1 BLS

SEMENOV, Yv. N.

AUTHORS: Semenov, Yv. N., Zhinkin, D. Ya., Kuznetsova, A. G., Kollorkin, R. G. 32-2-26/60

TITLE: Short Reports (Korotkiye soobshcheniya).

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 2, pp. 192-192 (USSR).

ABSTRACT: A method operating with a magnetic scales for the determination of the density of metal-ceramic ferromagnetic products is applied by Yu.N. Semenov (Polytechnical Institute imeni A.A. Zhdanov, Gor'kiy). The tear-off force of a permanent magnet is directly proportional to the density of the material. The duration of examination is similar to that according to the gravimetric method. Based on experimental results D.Ya. Zhinkin and A.G. Kuznetsova proposed a modification of the method according to ГОСТ 6989-54 for lacquers and paints, published by the lacquer and paint industry. An infrared lamp should be employed for the determination of the dry residue of Эфorganic silicon insulation lacquers, because by this means the duration of analysis is much reduced. R.G. Koldorkin (Polytechnical Institute imeni A.A. Zhdanov, Gor'kiy) determined the cross-sections of bodies with a complicated shape by means

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of displacement of liquid.

ASSOCIATION: Gor'kiy Politechnic Institute imeni A. A. Zhdanov (Gor'kovskiy Politekhnicheskiy Institut im. A. A. Zhdanova)

AVAILABLE: Library of Congress

1. Scientific reports-USSR

SOV/32-24-10-30/70

AUTHOR: Semenov, Yu. N.

TITLE: Determination of the Strength of Pressed Samples of Metal Powders (K opredeleniyu prochnosti pressovok iz metallicheskikh poroshkov)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 10, pp 1246-1247 (USSR)

ABSTRACT: The pressing method employed by A. V. Verkhovskiy and V. V. Romanovskaya (Ref 1) for determinations on the expansion of brittle metals was employed for determinations of the pressed samples as mentioned in the title. An iron powder of the type AM according to ChMTU 3648-53 was used in the experiments. The sieve composition of the powder is given as follows: -50+70 mesh - 0,05%, -70+100 mesh - 32,74%, -100+140 mesh - 25,12%, -140+200 mesh - 22,62%, - 200+270 mesh - 11,88%, -270 mesh - 7,31%. Its chemical composition is as follows: 98,11% Fe, 0,50% SiO_2, 0,13% C, 0,03% S. Samples of a diameter of 16 mm and a height of 16-17 mm were pressed in steel molds in a two-stage operation. The investigations of the radial compression were carried out on a hydraulic press of 4 tons. A diagram representing the dependence of the resistance in the expansion upon the density

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SOV/32-24-10-30/70

Determination of the Strength of Pressed Samples of Metal Powders

of cylindrical and plane samples is given. There are 1 figure and 1 reference, which is Soviet.

ASSOCIATION: Gor'kovskiy politekhnicheskiy institut (Gor'kiy Polytechnical Institute)

Card 2/2

PHASE I BOOK EXPLOITATION SOV/4919

Vinogradov, G.A., and Yu.N. Semenov

Prokatka metallicheskikh poroshkov (Roll Compacting of Metal Powders) Moscow, Metallurgizdat, 1960. 86 p. Errata slip inserted. 4,200 copies printed.

Ed.: A.K. Natanson; Ed. of Publishing House: M.S. Arkhangel'skaya; Tech. Ed.: Ye. B. Vaynshteyn.

PURPOSE: This booklet is intended for engineers, process engineers and designers in plants and scientific research and planning organizations of the metallurgical and machine-building industries.

COVERAGE: The booklet deals with Soviet and non-Soviet experience in the field of the roll compacting of metal powders - a new branch of the powder metallurgy. An outline of the techniques used for the roll compacting of metal powders and the properties of roll-compacted sintered products are described. Yu.N. Semenov wrote the first chapter of the booklet, G.A. Vinogradov the second chapter, and they collaborated in writing the remaining chapters. The authors thank G.A. Aksenov, I.M. Fedorchenko, and G.V. Samsonov, Professors, for their valuable

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contributions and suggestions. There are 58 references: 37 Soviet, 16 English, and 5 German.

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Roll-compacting mills 24
Devices used for feeding metal powder to the rolls 31

Ch. IV. Various Techniques Used in the Roll Compacting of Metal Powders 36

S/123/61/000/023/004/018
A052/A101

AUTHORS: Semenov, Yu.N., Shmakov, G.S.

TITLE: A new powdered-metal alloy for the electrode-tool of electro-sparking units and for electrodes of spot welding machines

PERIODICAL: Referativnyy zhurnal. Mashinostroyeniye, no. 23, 1961, 20, abstract 23A166 (Tr. Proyektn. tekhnol. i. n.-i. in-ta. Gor'kovsk. sovnarkhoz. no. 1(3), 1960, 78 - 88)

TEXT: A technology of production by the powder metallurgy method of a new heat and electroerosion resistant copper - alumina (2.5-3% Al_2O_3) alloy has been developed. The alloy is recommended for manufacturing the electrode-tool of electro-sparking units and electrodes of spot welding machines.

[Abstracter's note: Complete translation]

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S/137/61/000/012/065/149
A006/A101

AUTHOR: Semenov, Yu. N.

TITLE: Porous metal plates for the manufacture of filters

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 12, 1961, 47, abstract 120333 ("Tr. Proyektn. tekhnol. i n.-i. in-ta. Gor'kovsk. sovnarkhoz", 1961, v. I (7), 59 - 66)

TEXT: Plates 110 mm wide, 0.3 - 0.4 mm thick and of 70 - 75% porosity were obtained by the rolling of carbonyl Ni-powder of 63 - 100 μ fraction. Sintering at 1,200°C for 4 hours in dissociated moistened ammonia assured sufficient strength of the plates and prevented the washing-out of individual particles from the surface during the pumping of the filtered liquid. Porosity after sintering was 48 - 56%. At 0.3mm thickness of the plate, the degree of refining assured was 10 - 12 μ; and 8 - 10 μ at 0.4 mm thickness. At temperatures up to 250°C, the plates do not corrode in oil with traces of water, and in water itself. The plates can be soldered, corrugated, and notched. Their use as backing plates

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S/137/61/000/012/065/149
A006/A101

Porous metal plates for the manufacture of filters

raises the quality of soldering sintered carbide plates upon instruments. The cost of porous Ni-plates in mass production can be 7 - 8 times below the cost of small brass grids.

A. Epik

[Abstracter's note: Complete translation]

Card 2/2

AKSENOV, G.I.; KHROMOV, V.G.; NIKOLAYEV, A.N.; SEMENOV, Yu.N.

Rolling titanium powder into a thin strip using the method of the Gorkiy Polytechnical Institute. Titan i ego splavy no.3:152-158 '60. (MIRA 13:7)
(Titanium) (Metal powder products) (Rolling (Metalwork))

S/137/62/000/001/063/237
A060/A101

AUTHORS: Semenov, Yu. N., Shmakov, G. S., Yablokova, L. A.

TITLE: Technique for obtaining an alloy of copper and aluminum oxide, and its characteristics

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 40, abstract 1G311 ("Poroshk. metallurgiya," 1961, no. 3, 40-46, English summary)

TEXT: Alloys of Cu-Al_2O_3 (1 - 3.5% Al_2O_3) were prepared by the mixing of rolling Cu cinders and a water solution of Al trichloride. After drying the mixture was reduced in dissociated NH_3 at 700°C. The weak sinterability of the charge and also additional experiments on the heating of briquets up to 1,100°C (the briquets did not lose their form under this treatment) testify to the fact that under this method of mixing the oxides are uniformly distributed over the surface of the Cu particles. The production of compact specimens of Cu-Al_2O_3 was realized by pressing, sintering, and repressing of the specimens, and also by hot-nozzle pressing. The results of the measurement of the electric conductivity of the specimens and of the hardness as a function of the annealing temperature are cited. Al_2O_3 additions inhibit the recrystallization process.

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Technique for obtaining an alloy ...

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A060/A101

As shown by operational tests, the alloy Cu-Al_2O_3 may be recommended for fabricating electrode-tools of electric-spark treatment machines and for electrodes of spot-welding machines.

R. Andriyevskiy

[Abstracter's note: Complete translation]

Card 2/2

39647
S/137/62/000/007/027/072
A052/A101

1.1300

AUTHOR: Semenov, Yu. N.

TITLE: Rolling metal powders into thin highly porous strips

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 7, 1962, 12, abstract 7D62 ("Poroshk. metallurgiya", no. 5, 1961, 69 - 73)

TEXT: A simple method is worked out of controlling porosity at a constant thickness of strips rolled from a powder without changing the diameter of the rolls and the rolling speed. A schematic drawing of the appliance for controlling the porosity of strips is given. It has been possible to realize the rolling of highly porous reinforced strips by controlling the powder supply to the deformation zone by means of a gate-conduit. The application of powder rolling to the manufacture of electrode bases of barless batteries will enable one to achieve a considerable economic effect on account of an essential increase of labor efficiency and improved quality of production.

N. Yudina

[Abstracter's note: Complete translation]

Card 1/1

38599

S/131/62/000/007/003/003
B117/B138

15.2240

AUTHORS: Samsonov, G. V., Semenov, Yu. N., Borodulin, P. Ya.

TITLE: Refractories on boron nitride base

PERIODICAL: Ogneupory, no. 7, 1962, 332-336

TEXT: The authors studied the possibility of producing boron nitride refractories by nitriding pressed pieces of boron carbide. Experiments in a nitrogen stream showed 1800-1900°C to be the best sintering temperature. After 2 to 3 hrs, the boron carbide was almost completely converted. The products contained 82-83% boron nitride and 17-18% graphite, almost the same as the calculated amounts. Porosity was 18-22%. Due to the low porosity the material after sintering, had not 2.2 times (as expected), but 1.3 times its initial volume. The new fine grained, gray material is strong (compressive strength at 20°C: 1000 kg/cm^2, bending strength: 200-230 kg/cm^2) and can easily be cut, sawn, or drilled. The coefficient of thermal expansion is low: $\alpha = 2.35 \cdot 10^{-6}$ to $3.92 \cdot 10^{-6}$ between 170 and 1070°C. Below 1500-1600°C, samples of porosity ~ 20% had high resistivity (determined on an MOM-4 (MOM-4) instrument) (at 20°C $\varrho = 2.5 \cdot 10^{12}$ ohm/cm,

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